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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/769,341 | 01/26/2001 | Satoshi Imasu | | 4972 |

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10/04/2002

MATTINGLY, STANGER & MALUR, P.C.
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EXAMINER

VIGUSHIN, JOHN B

ART UNIT

PAPER NUMBER

2827

DATE MAILED: 10/04/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/769,341

Applicant(s)

IMASU ET AL. ✓

Examiner

John B. Vigushin

Art Unit

2827

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 January 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 14-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 19-22 is/are rejected.
- 7) ☒ Claim(s) 14-18 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 January 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 26 January 2001 is: a) ☒ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☒ Certified copies of the priority documents have been received in Application No. 09/048,054.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 1.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Continuing Application

1. The present Office Action is responsive the instant Continuing Application. The Examiner acknowledges the Preliminary Amendments filed as Paper Nos. 2 and 3, respectively, wherein Claims 1-13 have been cancelled and new Claims 14-22 have been added, and the Specification has been amended. Claims 14-22 are now pending in the instant Application.
2. The Examiner has reviewed all the prior art cited or relied upon for the rejections in the parent Application No. 09/048,054, filed March 26, 1998, now US Patent No. 6,208,525 B1, as required by the MPEP § 2001.06(b).

Specification

3. The Specification is objected to because of the following informalities:
On p.21, line 7: "electrode pads" should be changed to --bump electrodes--.
On p.23, line 5: "19" should be changed to --19A--.
Appropriate correction is required.

Claim Objections

4. Claims 14-22 are objected to because of the following informalities:
In Claim 14, line 6: before "elements" insert --a plurality of semiconductor--.
In Claim 16, line 2: before "rigid" insert --a--.
In Claim 19, line 4: change "ship" to --chip--.

In Claim 21, line 13: change "su4rface" to --surface--.

In Claim 21, line 20: after "respectively" change "." to --;--.

In Claim 21, line 23: before "upper" change "a" to --an--.

Claims 15, 17, 18, Claim 20 and Claim 22 depend from, respectively, the above
"objected to" Claims 14, 19 and 21 and therefore inherit the defects of those claims.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claims 19-22 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 19, lines 21-23 recite "wherein a distance between said electrode pads and said surface of said semiconductor chip is smaller than the thickness of said passivation film." This recited relationship of device measurements is not taught by the disclosure.

Claim 21, lines 21-24 recite "wherein a distance between said insulating layer and said first surface of said semiconductor chip is smaller than a distance between

said insulating layer and a [sic] upper surface of said passivation film." This recited relationship of device measurements is not taught by the disclosure.

Claims 20 and 22 depend, respectively, from rejected Claims 19 and 21 and therefore inherit the defects of those claims.

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 19 and 20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 19 recites the limitation "said passivation film" in line 23. There is insufficient antecedent basis for this limitation in the claim. Furthermore, where in the claimed electronic device is "said passivation film" structurally located?

Claim 20 depends from rejected Claim 19 and therefore inherits the defects of the claim.

Allowable Subject Matter

9. Claims 14-18 are objected to but would be allowable if rewritten to cure the defects set forth in section 4, above,

10. The following is a statement of reasons for the indication of allowable subject matter:

As to Claims 14-18, patentability resides in *a passivation film formed over the insulating layer, wherein the passivation film is not formed between the first electronic*

Art Unit: 2827

device and the insulating layer, in combination with the other limitations of base Claim 14.

As to Claims 19-22, patentability is indeterminate until the issues set forth in the 35 USC § 112, 1st and 2nd paragraph rejections, above, are resolved.

11. As allowable subject matter has been indicated, applicant's reply must either comply with all formal requirements or specifically traverse each requirement not complied with. See 37 CFR 1.111(b) and MPEP § 707.07(a).

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a) Beddingfield et al. (US 5,710,071) discloses a passivating layer 31 on a metallized main surface of substrate 30 but not between chip 20 and the main surface, although, in an alternate embodiment, the passivating layer (solder mask 31) can extend to the chip mounting region of the substrate (Fig. 8; col.5: 42-58). Beddingfield et al. does not teach a substrate main surface with a metallized insulating layer formed thereover, said insulating layer having a passivation layer thereon.

b) Dalal et al. (US 5,729,896) discloses a main substrate 10 with adhesive layer 12 thereon for laminating circuit layer 14; a passivating layer 20 on the circuit layer 14. Dalal et al. does not teach omitting the passivating layer 20 between any of chips 42, 44, 46, 48 and the mounting area on substrate 10 (Figs. 7, 8 and 9; col.7: 66-col.8: 29; col.9: 16-50).

Art Unit: 2827

c) Scholz (US 5,329,423) discloses a substrate 12 with compliant metallized coating layer 36 for receiving the bumps 24 and 26 of chip 10 (Figs. 1 and 2; col.4: 13-24).

d) The following references disclose a passivating layer on a metallized main surface of a substrate, including between the mounted chip and the main surface. The references do not teach a substrate main surface with a metallized insulating layer formed thereover, said insulating layer having a passivation layer thereon:

Takano et al. (US 5,952,727): Fig. 5B; col.3: 31-35.

Suzuki (US 5,925,445): Figs. 3 and 4A; col.6: 7-20 and 38-46.

Marrs (US 5,795,818): Figs. 6 and 8; col.8: 41-60.

Sweitzer (US 5,615,477): Figs. 3A,B; col.10: 25-49).

Shirasaki et al. (US 5,378,859): Figs. 3C and 4B; col.4: 13-22; col.5: 44-54.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to John B. Vigushin whose telephone number is 703-308-1205. The examiner can normally be reached on 8:30AM-5:00PM Mo-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David L. Talbott can be reached on 703-305-9883. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7382 for regular communications and 703-308-7382 for After Final communications.

Art Unit: 2827

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.



John B. Vigushin
Examiner
Art Unit 2827

jbv
September 29, 2002